



## The Appropriate Antibiotic Treatment the Morbidity and Mortality Rate of Bacterial Infections in Cirrhotic Patients

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### Abstract

Cirrhosis of liver is the end stage of multiple processes that lead to hepatic failure and eventually death. Patients with cirrhosis are immunocompromised and are predisposed to develop bacterial infections, sepsis and severe sepsis. The most common infections in cirrhosis are Spontaneous Bacterial Peritonitis (SBP, 25%-31%) followed by Urinary Tract Infection (UTI, 20%-25%), Pneumonia (15%-21%), Bacteremia (12%) and Cellulitis (11%). The aim of the study was to first identify the most frequent infections in patients with liver cirrhosis and evaluate the role of bacterial infections in clinical outcome of cirrhotic patients. We also tried to identify the most common cause of cirrhosis in our population.

**Keywords:** Bacterial infections; cirrhosis; cirrhosis complications; spontaneous bacterial peritonitis

### Introduction

Cirrhosis of liver is the end stage of multiple processes that lead to hepatic failure [1]. Approximately 40% of patients with cirrhosis are asymptomatic. That means, cirrhosis often is a silent disease, with most patients remaining asymptomatic until decompensation occurs [2]. Although increased mortality in cirrhosis is most often attributed to direct complications of the loss of liver function, a significant percentage mortality, succumb to bacterial infections, with infection-attributed mortality ranging from 7%-40% [1].

Patients with cirrhosis are immunocompromised and for that reason they are predisposed to developing bacterial infections, sepsis and severe sepsis. The mechanisms of increased susceptibility to infections in cirrhosis are unclear: endothelial alteration, leukocytes dysfunction, bacterial translocation and iatrogenic factors are some of them [3].

Bacterial infection is a complication that occurs frequently in patients with cirrhosis. It may be present upon admission or it may appear during the hospitalization. It may be up to 30-60% of hospitalized patients [4,5]. In 30% to 50% of patients, infection is the cause for hospital admission in cirrhosis, while 15% to 35% develop nosocomial infections during their hospital stay as compared with 5% to 7% in the general hospital population [6]. The most common infections in cirrhosis are Spontaneous Bacterial Peritonitis (SBP, 25%-31%) followed by urinary tract Infection (UTI, 20%-25%), pneumonia (15%-21%), bacteremia (12%) and cellulitis (11%) [7,8].

The aim of the study was first to identify the most frequent infections developed in patients with liver cirrhosis, as well as the most common cause of cirrhosis mentioned in our population.

### Methods

One hundred-ten (110) patients were included in that retrospective study. All of these patients had an established diagnosis of chronic liver failure and were admitted to the University hospital of Patras during a period of a one and half year.

The diagnosis of hepatic cirrhosis was based on clinical (splenomegaly, ascites,

jaundice etc.), biochemical (increased liver enzymes), echographic findings (ultrasound) and/or data from liver biopsy.

### Results

Demographic characteristics: One hundred and ten (110) patients with a history of cirrhosis were enrolled in our study. The mean age was 61±13 years. Most patients were male (87.5%). Female had a proportion about 12.7%.

Mortality rate was 9% (10 cases). Ten patients with sepsis or severe sepsis have died despite the fact that all were treated with broad spectrum antibiotics.

### Discussion

The present study showed a high incidence of Bacterial infections in patients with Liver cirrhosis. Patients with chronic liver disease sustain impairment to their immune system (Neutrophil and Macrophage dysfunction) which worsens over time and with disease progression and the reason predisposed for developing Bacterial infections [5,9].

According to the literature data about the frequency and distribution of bacterial infections in liver cirrhosis, Spontaneous bacterial peritonitis is the most frequent infection, followed by Urinary tract infections and Pneumonia [3,4,6]. Our results are a little differentiated in order from what is already published: Pneumonia was the most common infection (30.6%), followed by Spontaneous bacterial peritonitis (22.2%) and gastrointestinal infections (13.9%), while Urinary tract infections frequency was (8.3%).

### Conclusion

Infections are a major problem in patients with liver cirrhosis. This is a complication that worsens the already bad prognosis in this category of patients. A high rate of suspicion is needed for an infectious process in all patients with liver cirrhosis. Knowing the most frequent infections, based on



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our data and the existing literature, it facilitates and accelerates the diagnosis, resulting in faster initiation of appropriate treatment. With early diagnosis of the site of infection and the appropriate antibiotic treatment the morbidity and mortality rate of Bacterial infections in cirrhotic patients, can be decreased over the years.

**Competing Interests**

The authors declare that they have no competing interests.

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